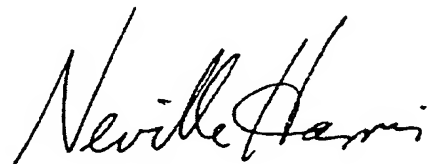


## CERTIFICATE

This certificate is issued in support of an application for Patent registration in a country outside New Zealand pursuant to the Patents Act 1953 and the Regulations thereunder.

I hereby certify that annexed is a true copy of the Provisional Specification as filed on 15 January 2001 with an application for Letters Patent number 509371 made by FORMWAY FURNITURE LIMITED.

Dated 20 February 2002.



Neville Harris  
Commissioner of Patents

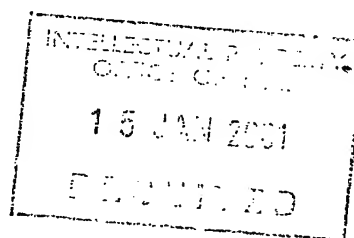


NEW ZEALAND  
PATENTS ACT, 1953

**PROVISIONAL SPECIFICATION**

STORAGE STRUCTURE AND DOOR STRUCTURE

We, FORMWAY FURNITURE LIMITED, 176 Gracefield Road, Petone, Wellington, New Zealand, do hereby declare this invention to be described in the following statement:



## **Field of the Invention**

5 The present specification relates to a storage structure which has pocketing doors. In particular, although not exclusively, the invention relates to a storage structure having a curved shape with the doors also being conformable to the curved shape. The specification also relates to a door structure whereby the door panel is conformable to a curved configuration. The present specification describes the invention in terms of a small mobile cabinet for office equipment but the invention will have application to other types of furniture including in-built furniture and domestic furniture. Additionally, some aspects of the invention may also have application to doors for buildings.

## **Background to the Invention**

15 With the reemergence of curved profiles in furniture forms in the latter part of the twentieth century, the difficulty arises in regard to doors for such curved furniture forms. Curved doors have in the past been made by steaming timber into the required shape. However, this is time-consuming and the technique is limited to doors constructed of timber. Furthermore, curved doors are typically difficult to move into a stowage position when a compact furniture unit is required.

20 Accordingly, it is an object of the present invention to provide a storage structure or a door structure which addresses at least some of the foregoing disadvantages and/or provides the public with a useful choice.

## **Summary of the Invention**

25 In accordance with a first aspect of the present invention there is provided storage structure including: a plurality of walls to provide a framework having a front and an interior, the plurality of walls including spaced side walls either side of the front; and an auxiliary panel slidably mounted substantially within the interior of the framework to slide adjacent one of the side walls; and a door panel hingedly connected to the auxiliary panel by means of a hinge portion whereby the door panel is pivotable about the hinge portion from a closed position in which the door at least partially covers the front of the framework to an open position, and movable from the open position to a pocketed position 30 in which the door is at least partially received within the interior of the framework and adjacent to one of the side walls.

In a particularly preferred form of the invention, the door panel and the auxiliary panel may be integrally formed. In particular, the door panel and the auxiliary panel may comprise a unitary plastic sheet. Suitably, the divide between the door panel and the auxiliary panel in the unitary plastic sheet is defined by the hinge portion. Most preferably the hinge portion is a live hinge comprising a region of reduced thickness in the plastic sheet.

The interior storage structure may be further provided with a cavity open at the front within which the auxiliary panel is slidably mounted and into which the door panel is movable when in the pocketed position. The cavity may be defined by two side walls, the inner one relative to the interior defining a hinging edge. The door panel and the auxiliary panel may be extendible from the cavity until the hinge is aligned with the hinging edge. Most preferably, a stop is provided to limit the outward travel of the door panel and the auxiliary panel from the cavity.

Preferably one or more guides are provided to facilitate the sliding travel of the auxiliary panel and/or the door panel. However in a most preferred form of the invention only the auxiliary panel is slidably mounted to one or more guides with the door panel being free of the one or more guides.

The storage structure may be in a curved configuration with a correspondingly curved door panel. Accordingly, the cavity may be correspondingly curved to receive the curved door panel. However, in a most preferred form of the invention, the door panel is flexible and the door frame is curved such that the flexible door panel is conformable to the curved door frame. In this form of the invention, the cavity to receive the door panel in the pocketed position need only be straight whereby the flexible door panel can be straightened to be received with the cavity. The door panel may be of any construction enabling it to adopt a curved configuration or a configuration approximating a curved configuration. For example, the door panel may be constructed of interconnected sections in a manner similar to a tambour door. However, in a most preferred form of the invention the door panel is in the form of a resiliently deformable plastic sheet. As mentioned above, the door panel may also be integral with the auxiliary panel within a unitary plastic sheet.

A retainer may also be provided to retain the door in the closed position especially in view of the embodiment of a flexible door panel. Accordingly, one or more first engagement portions may be provided on the outer edge of the door panel with one or more cooperable

second engagement portions provided on a corresponding part of the door structure. The first and second engagement means may be continuous along the outer edge and on the corresponding part of the door frame. For example, hook and loop fastener may be used as the retainer (VELCRO(TM)). Alternatively, magnetic strips or tabs may be used.

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In accordance with a second aspect of the present invention there is provided a door structure including: a door frame having edge portions of which at least some are curved; a flexible door panel in the form of a unitary plastic sheet which is resiliently deformable and movable between an open configuration and a closed configuration to adopt a curved configuration corresponding to the curvature of the curved edge portions of the door frame.

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Preferably the curved edge portions of the door frame are such that the door panel curves convex outwardly. Most preferably, the door is uniformly curved about an upright axis. The curved edge portions of the door frame may comprise the top and bottom edges of the door frame.

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In a most preferred form of the invention, the door structure is embodied in a storage structure having pocket type doors. Suitably, such a storage structure includes a plurality of walls to provide a framework having a front and an interior. The door panel is suitably pivotable relative to the framework between a closed position in which the door panel at least partially covers the front and an open position, and slidable between the open position and a pocketed position in which the door panel is at least partially received within the interior of the framework. Most preferably, in the pocketed position, the door panel is configured in a straighter configuration compared to the curved configuration adopted for the closed position. This provides economy of space in the pocketed position. The auxiliary panel is preferably slidably mounted within the interior. The door panel and the auxiliary panel may comprise a one piece flexible plastic construction with a live hinge dividing the door panel from the auxiliary panel.

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The auxiliary panel may be received within a cavity open at the front of the framework, the cavity being defined by two side walls. Most preferably, the edge of one of the side walls defines a hinging edge of the door frame about which the door panel hinges. Furthermore, the door frame preferably includes a side edge along which the outer edge of the flexible door panel may be secured to maintain the curved configuration. Any of the features described above in accordance with the first aspect of the invention may be applied to the second aspect of the invention.

35

This invention may also be said broadly to consist in the parts, elements and features referred to or indicated in the specification of the application, individually or collectively, and any or all combinations of any two or more of said parts, elements or features, and where specific integers are mentioned herein which have known equivalents in the art to which this invention relates, such known equivalents are deemed to be incorporated herein as if individually set forth.

The invention consists in the foregoing and also envisages constructions of which the following gives examples.

### **Brief Description of the Drawings**

In order that the invention may be more fully understood one embodiment will now be described by way of example with reference to the drawings in which:

Figure 1 is a perspective view of a storage unit in accordance with a preferred embodiment of the present invention, as shown from the front;

Figure 2 is a perspective view of the storage unit of Figure 1, except shown from behind;

Figure 3 is a perspective view of a portion of the storage unit illustrated in Figure 1, shown with the door panel in the pocketing position;

Figure 4 is a perspective view of the portion shown in Figure 3, except with the door panel illustrated as closing;

Figure 5 is a diagrammatic sketch of a top view of the portion illustrated in Figure 3 illustrating the door in the pocketed position;

Figure 6 is a diagrammatic front view of the portion of the storage unit shown in Figure 5;

Figure 7 is a diagrammatic side view of the portion of the storage unit shown in Figure 5;

Figure 8 is a diagrammatic top view of the storage unit illustrating the door in the open position and in the closed position;

Figure 9 is a schematic front view of the portion of the storage unit shown in Figure 8; and

Figure 10 is a schematic side view of the portion of the storage unit illustrated in Figure 8.

### **Preferred Embodiment**

The storage unit 10 illustrated in Figures 1 and 2 includes a top work surface 12, a base 14 which is mounted on castors or wheels 16. As the storage unit 10 is intended to be mobile, the top 12 includes integrally formed handle portions 18 enabling a user to selectively move the storage unit as required. The storage unit 10 may also facilitate

attachment of a number of accessories and apertures 20 are specifically provided for this purpose. Furthermore slots 22 provided in the side walls 24 of the storage unit 10 facilitate the attachment of shelves to the sides of the storage unit.

5 From an appreciation of Figures 1 and 2 it can be seen that in plan, the outline of the storage unit 10 is elliptical. Accordingly, the top work surface 12 has an elliptical outline as with the base 14. Extending between the top work surface and the base 14 are two side walls 24 and a back wall 26 which generally define a framework for a storage space inside the storage unit 10. The framework defines an interior 30 (See Figure 3) and a front 32  
10 which in Figure 1 is closed by a pair of door panels 35. It will be seen from Figure 1 that the door panels 35 when in the closed configuration as illustrated, adopt a curved configuration, corresponding to the curvature of the corresponding edge of the top work surface 12 and the base 14. The door panels 35 hinge about live hinges 37 disposed centrally of the front of the framework.

15 Referring to Figure 3, only a portion of the storage unit 10 is illustrated, sufficient to show the operation of a single door panel 35. For clarity, the rear wall 26 and one of the side walls 24 is also removed. Figure 3 illustrates the door panel 35 in a pocketed configuration whereby it is received within the interior 30 of the storage structure 10. The  
20 door panel 35 is part of a unitary plastic sheet which also incorporates an auxiliary panel 40. Between the auxiliary panel 40 and the door panel 35, a region of reduced thickness is provided which defines the live hinge 37. The plastic sheet forming the door panel 35 and the auxiliary panel 40 is resiliently deformable to enable the door panel 35 to adopt the curved configuration as illustrated in Figure 1. An appropriate material is  
25 polypropylene.

As can be seen from Figure 7, the auxiliary panel 40 has upper and lower tabs 42 which are slidingly received within respective upper and lower guide slots 44. The lower guide slot 44 can be seen from an inspection of Figure 4. With the tabs 42 slidingly received in  
30 respective guide slots 44, the auxiliary panel 40 is able to slide from a pocketed position A in which the door panel 45 is wholly received within the interior 30 of the storage structure to an open position as depicted by B as shown in Figure 8. Once the door panel reaches the open position, the tabs 42 of the auxiliary panel reach the end of their travel within guide slots 44, the guide slots 44 terminating a short distance before the front edge  
35 of the top work surface 12 and the base 14. At this point, the door panel 35 will not be permitted to slide further outwards. As such, as shown in Figure 8 once the door panel 35 reaches the position indicated by B, the position of the live hinge 37 will correspond

approximately with the front of the storage unit.

5 The door panel 35 may then be pivoted about live hinge 37 until the door panel 35 reaches the closed position as depicted by C in Figure 8. It can be seen that the door panel 35 adopts a curvature corresponding to the curvature of the front edge of the top work surface 12 and the base 14. The door panel 35 may bear against upper and lower curved edge portions of the door frame, thereby defining the appropriate curvature for the door panel 35. The outer edge of the door panel 35 may be provided with a first engagement portion of a retainer to secure the door panel 35 in the closed configuration. A second  
10 engagement portion may be provided on the corresponding edge of the door frame, the second engagement portion be co-operable with the first engagement portion to retain the door panel in the closed configuration. Preferably, the retainer is Velcro or a magnetic catch.

15 The foregoing describes only one embodiment of the present invention and modifications may be made thereto without departing from the scope of the invention.



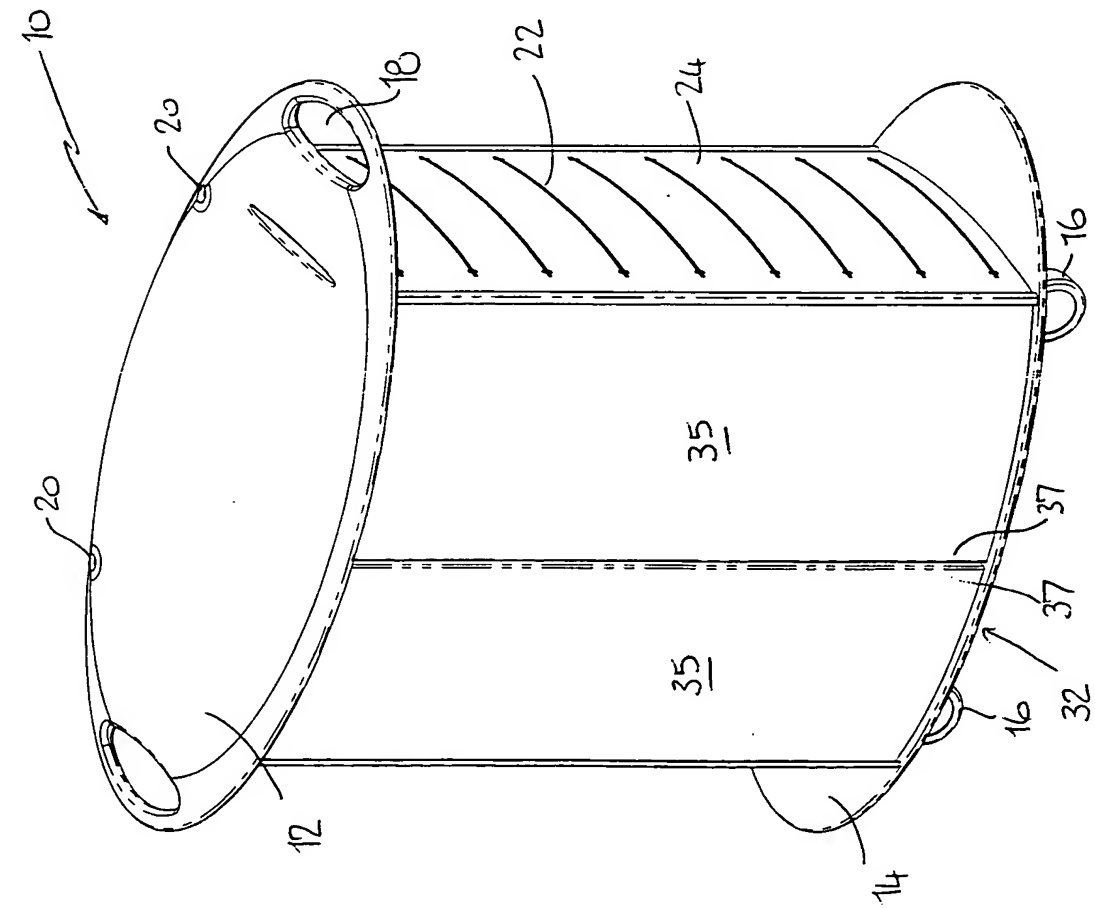


FIG. 1

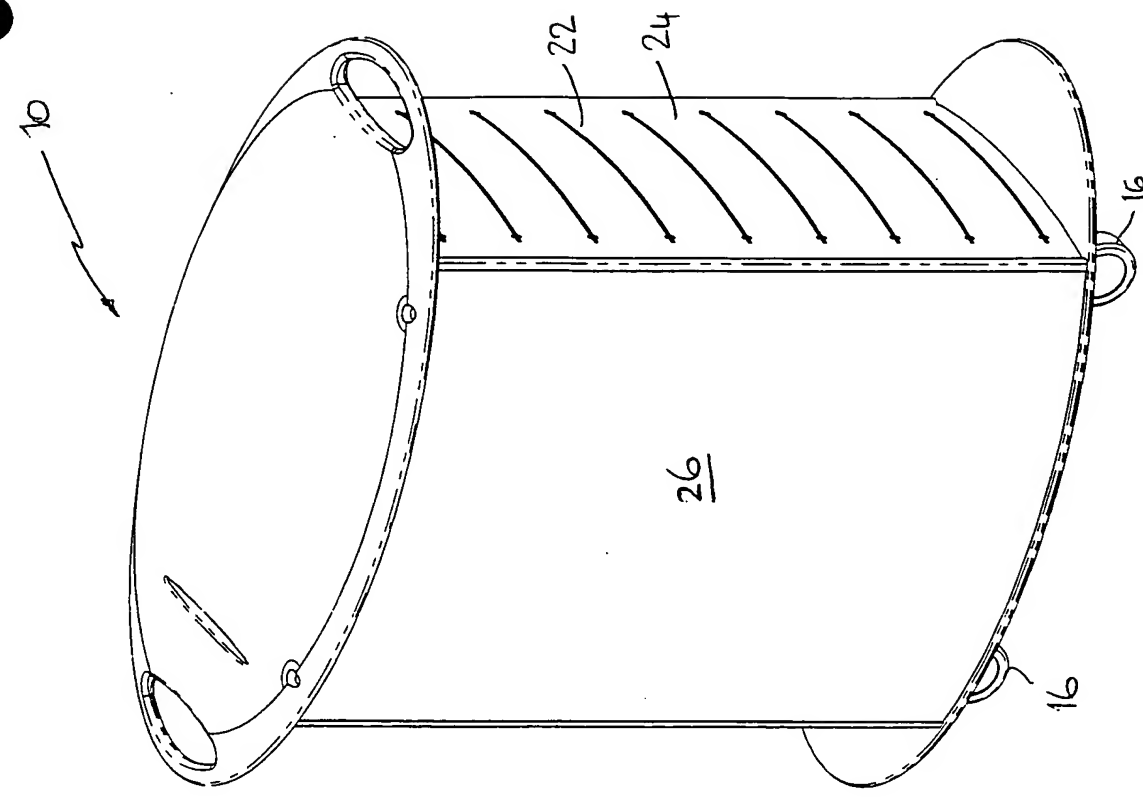
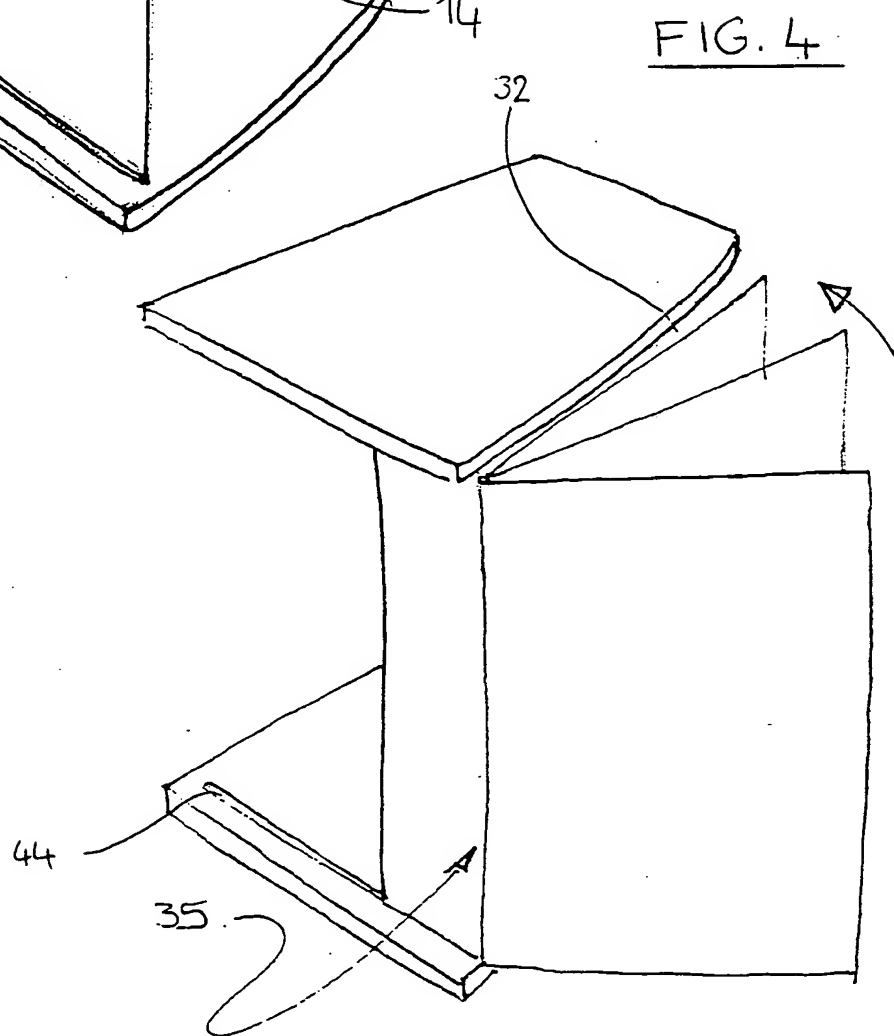
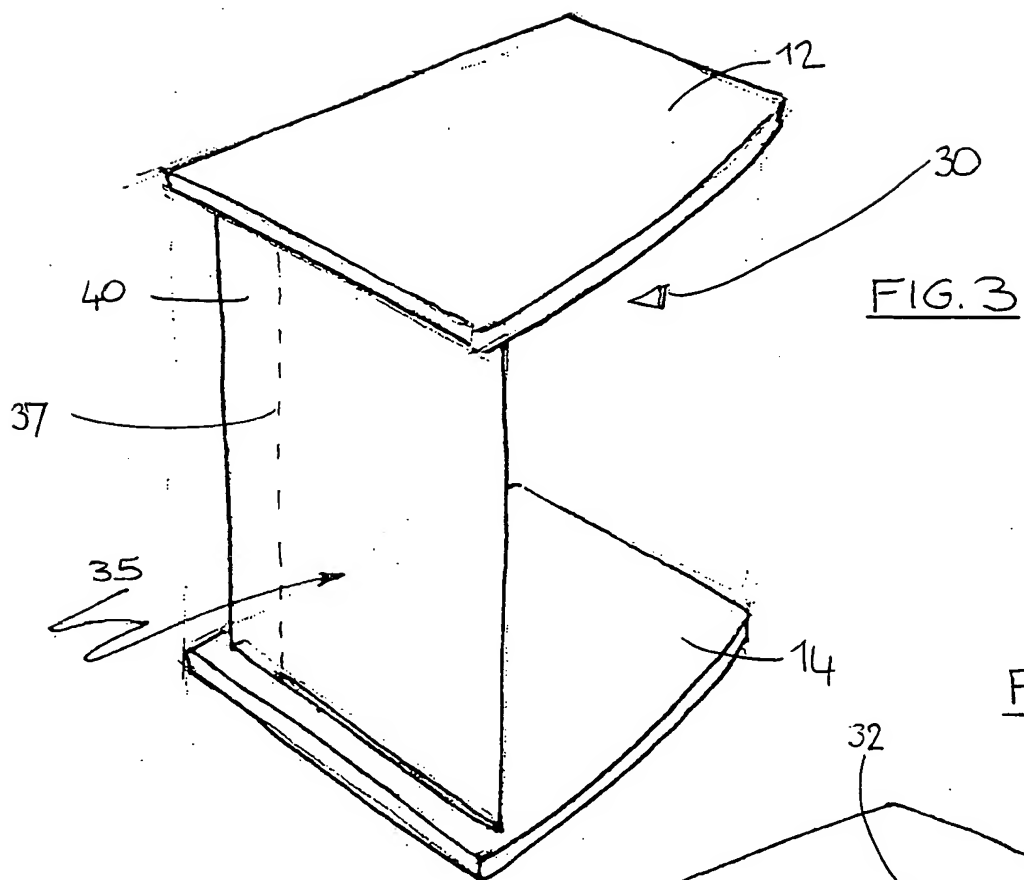
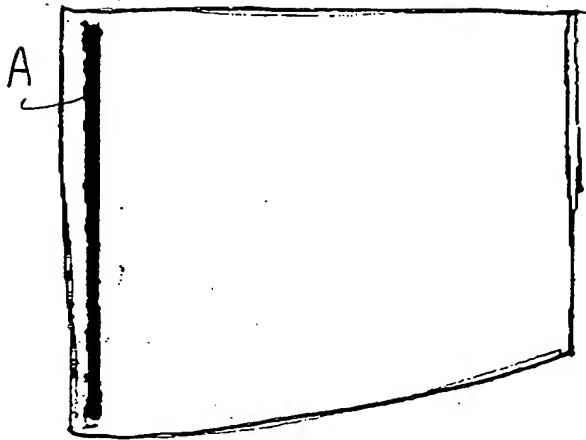


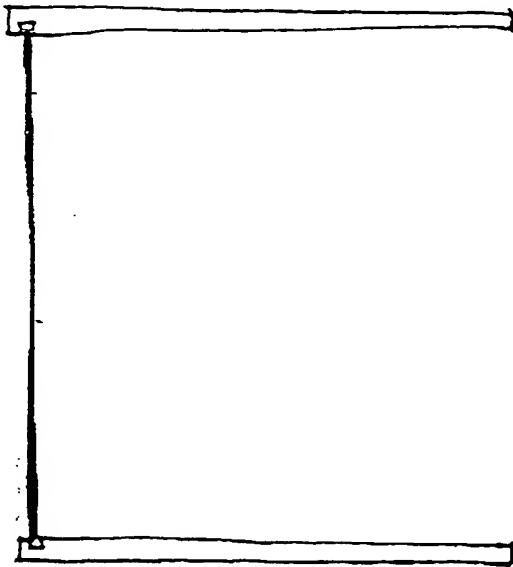
FIG. 2





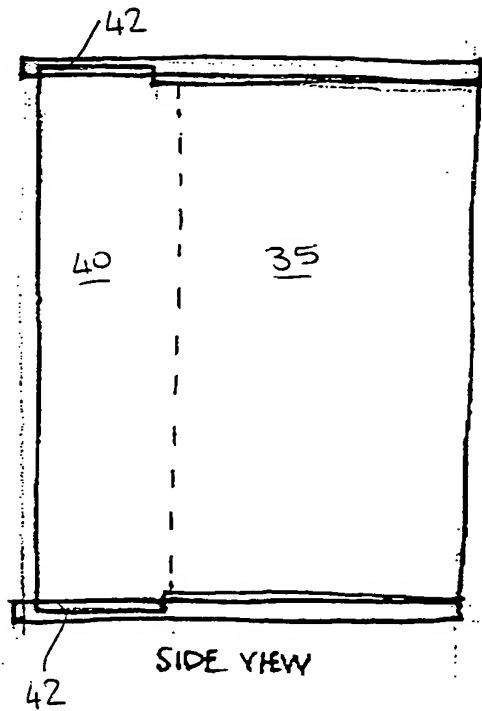
TOP VIEW

FIG. 5



FRONT VIEW

FIG. 6



SIDE VIEW

FIG. 7

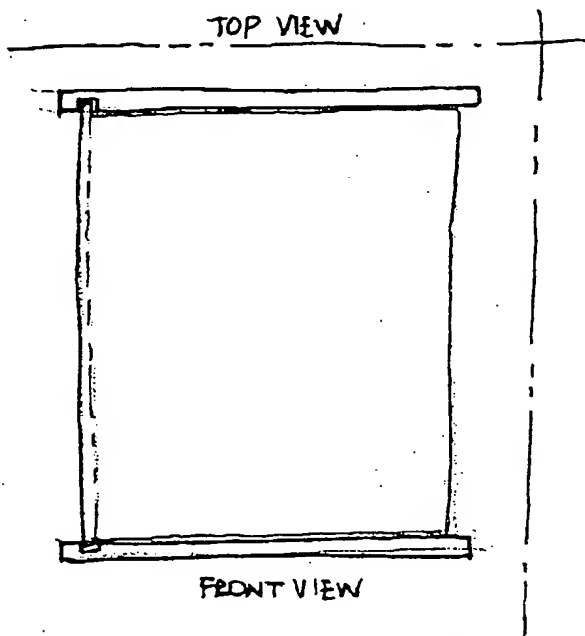
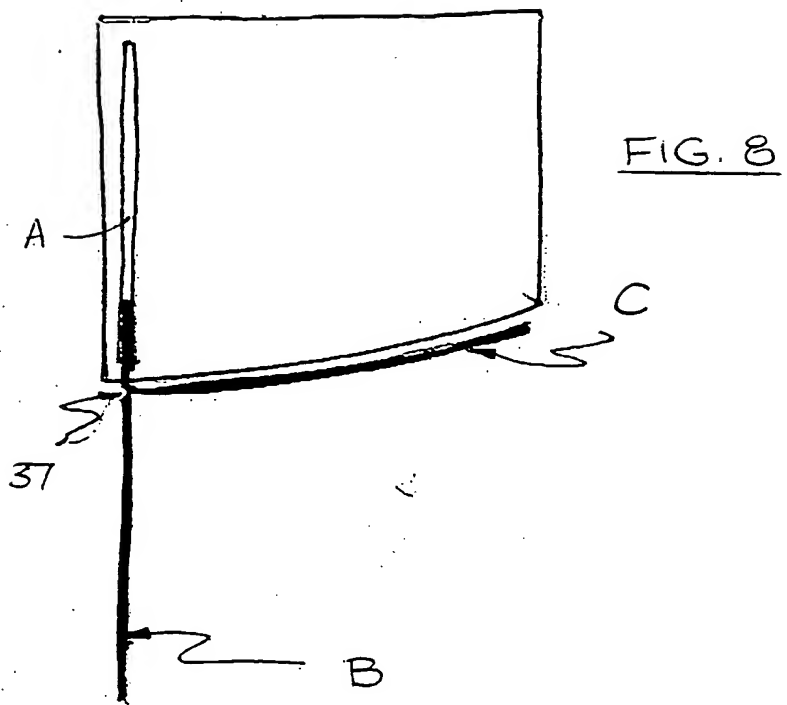


FIG. 9

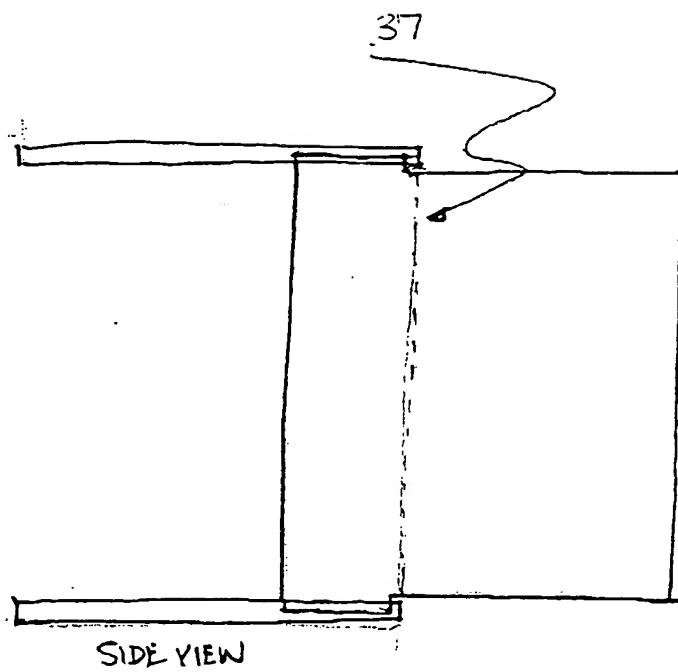


FIG. 10